

What is claimed is:

1. A pixel structure for an LCoS display to reflect an incident light at an incident angle to an output light at an output angle, the pixel structure comprising:

a glass plate for refracting the incident light to a first light at a first angle;

a pixel electrode under the glass plate;

an insulator formed on the pixel electrode;

a plurality of reflectors on the insulator for reflecting the first light to a second light at a second angle to be further refracted by the glass plate to the output light;

a passivation on the plurality of reflectors and the insulator; and

a transparent conductor on the passivation.

2. The pixel structure of claim 1, wherein the transparent conductor is electrically connected to the pixel electrode by the plurality of reflectors.

3. The pixel structure of claim 1, wherein the transparent conductor is directly connected to the pixel electrode.

4. The pixel structure of claim 1, wherein each of the plurality of reflectors is oblique at a third angle.

5. The pixel structure of claim 4, wherein each of the plurality of reflectors comprises a high reflective metal.

5 6. The pixel structure of claim 4, wherein each of the plurality of reflectors comprises a high reflective multilayer coating.

10 7. The pixel structure of claim 4, wherein the plurality of oblique reflectors comprises:

a first group of reflectors each having a reflective surface with a third angle to the insulator for reflecting a first wavelength component of the first light;

15 a second group of reflectors each having a reflective surface with a fourth angle to the insulator for reflecting a second wavelength component of the first light; and

a third group of reflectors each having a reflective surface with a fifth angle to the insulator for reflecting a third wavelength component of the first light.

20 8. The pixel structure of claim 1, wherein each of the plurality of reflectors has an optical grating.

25 9. The pixel structure of claim 8, wherein the optical grating comprises one or more metal layers in stack.

10. The pixel structure of claim 8, wherein the optical grating comprises a high reflective multilayer coating.

5 11. The pixel structure of claim 8, wherein the plurality of reflectors comprises:

a first group of the optical gratings having a first period for reflecting a first wavelength component of the first light;

10 a second group of the optical gratings having a second period for reflecting a second wavelength component of the first light; and

a third group of the optical gratings having a third period for reflecting a third wavelength component of the first light.

12. The pixel structure of claim 1, wherein each of the plurality of reflectors comprises:

a planar reflective surface; and

20 a transparent element on the planar reflective surface for refracting the first light to be vertically incident on the planar reflective surface.

13. The pixel structure of claim 12, wherein the planar reflective surface comprises a high reflective metal.

14. The pixel structure of claim 12, wherein the transparent element comprises one or more microprisms.

5 15. The pixel structure of claim 12, wherein the plurality of reflectors comprises:

 a first group of the transparent elements for refracting a first wavelength component of the first light;

 a second group of the transparent elements for refracting a second wavelength component of the first light; and

10 a third group of the transparent elements for refracting a third wavelength component of the first light.

16. A method for an LCoS display to reflect an incident light at an incident angle to an output light at an output angle, the method comprising the steps of:

 refracting the incident light to a first light at a first angle;

 reflecting the first light to a second light at a second angle by a plurality of oblique reflectors; and

20 refracting the second light to the output light.

17. The method of claim 16, wherein the step of reflecting the first light comprises the steps of:

 reflecting a first wavelength component of the first light by a first group of the reflectors each having a reflective

surface oblique at a third angle;
reflecting a second wavelength component of the first light
by a second group of the reflectors each having a
reflective surface oblique at a fourth angle; and
5 reflecting a third wavelength component of the first light by
a third group of the reflectors each having a reflective
surface oblique at a fifth angle.

10 18. The method of claim 16, wherein the step of
reflecting the first light comprises diffracting the first light.

19. A method for an LCoS display to reflect an
incident light at an incident angle to an output light at an output
angle, the method comprising the steps of:
15 refracting the incident light to a first light at a first angle;
reflecting the first light to a second light at a second angle
by a plurality of optical gratings; and
refracting the second light to the output light.

20 20. The method of claim 19, wherein the step of
reflecting the first light comprises the steps of:
reflecting a first wavelength component of the first light by a
first group of the optical gratings having a first period;
reflecting a second wavelength component of the first light
25 by a second group of the optical gratings having a

second period; and
reflecting a third wavelength component of the first light by
a third group of the optical gratings having a third
period.

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21. A method for an LCoS display to reflect an
incident light at an incident angle to an output light at an output
angle, the method comprising the steps of:

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refracting the incident light to a first light at a first angle;
refracting the first light to a second light at a second angle
by a plurality of transparent elements;
reflecting the second light to a third light at a third angle by
a plurality of planar reflective surfaces;
refracting the third light to a fourth light at a fourth angle by
the plurality of transparent elements;
refracting the fourth light to the output light.

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22. The method of claim 21, wherein the step of
refracting the first light comprises the steps of:

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refracting a first wavelength component of the first light by a
first group of the transparent elements;
refracting a second wavelength component of the first light
by a second group of the transparent elements; and
refracting a third wavelength component of the first light by
a third group of the transparent elements.

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23. The method of claim 21, wherein the step of reflecting the second light comprises diffracting the second light.